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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/692,420	10/19/2000	Hooman Darabi	39385/CAG/B600	2204
7590	12/29/2005			EXAMINER MILORD, MARCEAU
CHRISTOPHER C. WINSLADE MCANDREWS, HELD & MALLOY 500 W. MADISON STREET SUITE 3400 CHICAGO, IL 60661			ART UNIT 2682	PAPER NUMBER

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/692,420	DARABI ET AL.	
	Examiner	Art Unit	
	Marceau Milord	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 October 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-81 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 62-74 is/are allowed.
 6) Claim(s) 1-61 and 75-81 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1- 61, 75-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Degenhardt (US Patent No 5828589) in view of Hornak et al (US Patent No 567822).

Regarding claims 1-8, 11, 16-18, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a plurality of filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose the feature of a bypass circuit coupled across one of the cascaded filters, and a plurality of cascaded filters wherein the bypass circuit comprises a switch, wherein the cascaded filters each comprises a biquad filter.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output

port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 9, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the filters each comprises a pole and a zero (col. 7, line 22- col. 8, line 54).

Regarding claim 10, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprise a complex filter with a pole and a zero (col. 7, line 22- col. 8, line 54).

Regarding claim 12, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the feedback resistors is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 13, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable feedback resistor comprises a plurality of resistors coupled in series, said plurality of resistors each having a switch coupled there across comprising: a plurality of cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 14, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the feedback capacitors is Programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 15, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable feedback capacitor comprises a plurality of capacitors coupled in parallel, said plurality of capacitors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 19, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the capacitors is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 20, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable capacitor comprises a plurality of capacitors coupled in parallel, said plurality of capacitors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 21, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one the resistor is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 22, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable resistors comprises a plurality of resistors coupled in series, said plurality of resistors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22-col. 8, line 54).

Regarding claims 23-28, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a plurality of filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose a bypass means for bypassing at least one of the cascaded filters, wherein the bypass means comprises a switch coupled across one of the cascaded filters; wherein the bypass means comprises a plurality of switches each being coupled across a different one of the cascaded filters, wherein the switches each comprises means for being individually controlled; wherein the cascaded filters each comprise a biquad filter.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching

element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 29, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprise means for generating a pole and zero (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 30, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprises a complex filter, the complex filters each comprising means for generating a pole and zero (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Claims 31-43 contain similar limitations addressed in claims 1-25, and therefore are rejected under a similar rationale.

Regarding claim 44, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a biquad filter (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose a polyphase filter coupled to the biquad filter.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of

Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 45, Degenhardt as modified discloses a filter circuit (figs. 1-2), further comprising a plurality of biquad filters including the biquad filter; and a plurality of polyphase filters including the polyphase filter, the biquad filters being intertwined with the polyphase filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 46, Degenhardt as modified discloses a filter circuit (figs. 1-2); further comprising a plurality of bypass circuits each being coupled across a different node of the biquad filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 47, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein each of the bypass circuits is adapted for individual control (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Claims 48-61 contain similar limitations addressed in claims 12-22, and therefore are rejected under a similar rationale.

Regarding claim 75, Degenhardt discloses a method of complex filtering (figs. 1-2) to extract a signal in a frequency spectrum comprising: a plurality of channels), comprising: selecting one of the channels having the signal; rejecting an image of the signal in the selected channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose the step of applying gain to the signal, the applied gain being programmable.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching

signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 76, Degenhardt as modified discloses a method of complex filtering to extract a signal in a frequency spectrum comprising: a plurality of channels wherein the channel

selection comprises tuning a center frequency of the channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 77, Degenhardt as modified discloses a method of complex filtering to extract a signal in a frequency spectrum comprising: tuning a bandwidth of the channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 78, as modified discloses a method of complex filtering to extract a signal in a frequency spectrum further comprising introducing a zero to filter a frequency in the selected channel different from a frequency of the signal (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 79, Degenhardt as modified discloses a method of complex filtering to extract a signal in a frequency spectrum comprising introducing a plurality of zeros each filtering a different frequency in the selected channel, the filtered frequencies each being different from a frequency of the signal (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 80, Degenhardt as modified discloses a method of complex filtering (fig. 5 and fig. 19) to extract a signal in a frequency spectrum wherein the introducing of the zeros comprises programming the number of the zeros introduced (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 81, Degenhardt as modified discloses a method of complex filtering (fig. 5 and fig. 19) to extract a signal in a frequency spectrum wherein the channel selection further comprises programming an order of complex filtering (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Response to Arguments

3. Applicant's arguments with respect to claims 1-61, 75-81 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, To H. Doris can be reached on 571-272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER

Primary Examiner

Art Unit 2682